

Linear response of the outer core flow to the thermal heterogeneity on the core-mantle boundary : Effects of the Ekman number

Shigeo Yoshida[1]

[1] Earth and Planetary Sci., Nagoya Univ.

I investigated the linear response of the outer core flow to the thermal heterogeneity on the core-mantle boundary. I studied the simplest case without a magnetic field, a basic flow or the inner core for a neutrally stratified core. The behavior of the solution depends on the Ekman number. When the Ekman number is large (weak rotation), the pattern of the flow shift westward a little relative to the irrotational case. When the Ekman number is small (strong rotation), the solution can be understood as a superposition of the thermal wind solution and the Ekman, modified Ekman and Stewartson boundary layers.